Organic Foods: A Comparison of Selection, Perception, and Consumption Habits of College Students in Indiana and Oregon

An Honors Thesis (HONRS 499)

by

Jennifer Lounsberry

Carol Friesen, PhD, RD

Dr. Carol Friesen

Ball State University

Muncie, Indiana

December 2004

Organic Foods: A Comparison of Selection, Perception, and Consumption Habits of College Students in Indiana and Oregon

An Honors Thesis (HONRS 499)

by

Jennifer Lounsberry

Carol A Friesen, PhD, RD

Dr. Carol Friesen

Ball State University

Muncie, Indiana

December 2004

ABSTRACT

THESIS: Organic Foods: A Comparison of Selection, Perception, and Consumption Habits of College Students in Indiana and Oregon

STUDENT: Jennifer Lounsberry

DEGREE: Bachelor of Science

COLLEGE: Applied Sciences and Technology

DATE: December 2004

PAGES: 56 pages

The purpose of this study was to compare perceptions about the benefits and the motivation for selecting and consuming organic foods between students in two different geographic locations (e.g., Ball State University (BSU) in Muncie, Indiana and University of Oregon (U of O) in Eugene, Oregon).

A total of 183 adults completed this survey—76 students from BSU and 107 students from U of O. The results indicated that Oregon students were much more likely to choose organic foods than Indiana students on a "daily" or "weekly" basis. Students in Oregon were more likely to feel that artificial colorings and flavors, hormones, and antibiotics in meat were harmful to humans. Artificial colorings and flavors were also viewed as detrimental to the environment by Oregon students. Organic foods were viewed as healthier, safer, better for the environment, better tasting, and more in harmony with political and religious views to students surveyed in Oregon. More Indiana students stated that a higher cost was a reason why they did not select organic foods. Overall, Oregon students were much more likely to consume organic foods, and they were more likely to feel that the consumption of organic foods was beneficial to both humans and the environment.

ACKNOWLEDGEMENTS

I would like to thank the people who have made this thesis possible. First, thank you to Dr. Carol Friesen, who selflessly helped me throughout the entire thesis, all of the way from brainstorming for ideas to the finished paper. Thank you, also, to Dr. Jerome Kotecki, who helped me set up the statistical aspects of this thesis and allowed me to administer the survey in his class. A special thanks goes to Amanda Scott, Amanda Matthews, and Mona Wenger for their tireless work helping me with the statistical analysis. Many thanks to Mrs. Morgan at the University of Oregon for being a patient and eager collaborator on this project. Finally, thank you to my family and friends who have supported me over the years. I am deeply grateful for everyone's encouragement and guidance.

TABLE OF CONTENTS

PAGE

TABLE OF CONTENTS, CONT.

PAGE

TABLE OF CONTENTS, CONT.

PAGE

LIST OF TABLES

CHAPTER 1

INTRODUCTION

Organic foods are taking the world by storm. Once a niche product sold in a limited number of outlets, organic foods are currently sold in markets, natural product supermarkets, and everyday conventional supermarkets. Although only approximately 0.3 percent of all United States cropland and 0.2 percent of all United States pasture was certified organic in 2001, adoption of organic farming systems continues to show strong and consistent gains (Economic Research Service [ERS], 2004). Certified organic crop ground in the United States doubled between 1992 and 1997, and again between 1997 and 2001 (ERS, 2004).

What exactly does the term "organic" mean? In its national standards, the USDA defines organic foods as those produced by farmers who emphasize the use of renewable resources and the conservation of soil and water to help protect future generations. Organic meat, poultry, eggs, and dairy products come from animals that are given no antibiotics or growth hormones. Organic food crops are produced without using bioengineering, radiation, or most conventional pesticides, including

sewage sludge and fertilizers made with synthetic ingredients (U.S. Department of Agriculture [USDA], 2000).

Consumers have recently shown an interest in the organic market. Growth in retail sales has increased by 20 percent or more annually since 1990 (ERS, 2004). Although procurers of natural products were the primary targets of the organic market, there has been a dramatic shift in this pattern between 1991 and 2000. In 1991, 7 percent of all organic products were sold in conventional supermarkets, while 68 percent were sold in natural products stores. For the first time in the year 2000, more organic foods were purchased in conventional supermarkets than in any other venue (Dimitri & Green, 2002).

What reasons might motivate consumers to purchase organic foods? Several industry groups have surveyed customers about their preferences and buying habits for organic foods; unfortunately, the results are not always consistent (ERS, 2004). The Food Marketing Institute's 2001 survey indicated 37 percent of shoppers stated they purchased organic foods to maintain their health. Similarly, the Hartman Group's 2000 study stated 66 percent of consumers purchased organic foods for health and nutrition reasons; taste (38 percent), environment (26 percent), and availability (16 percent) were also given as significant reasons (Hartman Group, 2000). Sixty-three percent of respondents in the Walnut Acres survey responded they believed organic foods and beverages were better for them than conventional foods and beverages (Walnut Acres, 2002).

Researchers have also tried to identify the "typical" organic consumer. Age, gender, and having a college degree seem to have little impact on whether a shopper

will choose to purchase organic foods (Thompson and Kidwell, 1998). However, results of a study about organic potatoes indicated consumers with higher incomes and higher levels of education were more willing to pay more for organic products (Pritchett and Hine, 2003). Several studies have also shown that households with children under 18 are more likely to purchase organic produce (Economic Research Service [ERS], 2004).

If a "typical" organic consumer becomes more reliably identified through research, sellers of organic foods will be able to more easily promote their products directly to the consumer. Similarly, more research is needed to help determine motivations for consuming organic foods. As a growing industry, the organic foods segment will be able to more easily market itself to consumers if motivations to purchase these foods are consistently identified in several studies. Additionally, if a lack of availability is shown to be a significant problem in an area, organic purveyors may want to consider introducing their products in areas where organic curiosity, but not necessarily organic food, exists.

Purpose

The purpose of this study is to compare perceptions about the benefits of organic foods, as well as to determine the motivation for selecting and consuming organic foods between students in two different geographic locations (e.g., Ball State University in Muncie, Indiana and University of Oregon in Eugene, Oregon).

Rationale

Availability and consumption of organic, or "environmentally friendly" foods have become a notable trend within the past few decades. This trend, however, seems to have developed a massive following in some areas of the country, while remaining stagnant in others. Previous studies have examined factors such as availability, environmental beliefs, cost, and perceived health benefits to determine reasons why one would choose to eat organic foods. This study will provide data from two different geographic locations in order to compare perceived availability of organic foods, environmental and personal benefits, and general motivations for food consumption in two different communities.

This research may be significant in identifying a need for a certain kind of product in a specific geographic area. Research results regarding motivations for choosing organic foods may help food companies better market their products to different types of consumers; in addition, if the results show that availability of organic products in a community is perceived as low, there is a potential of increasing this availability at the urging of consumers.

Research Questions

The following research questions were addressed in this study:

1. On a daily basis, do students in Indiana and Oregon differ in the types of foods consumed?
2. Do opinions on the effects of pesticides, preservatives, and other food modifications on humans differ between students in Indiana and Oregon?

3. Do opinions on the effects of pesticides, preservatives, and other food modifications on the environment differ between students in Indiana and Oregon?
4. Are organic foods consumed more frequently in Oregon than in Indiana?
5. Do the factors associated with the consumption of organic foods differ between students in Indiana and Oregon?
6. Do the factors associated with not consuming organic foods differ between students in Indiana and Oregon?
7. Do students in Indiana and Oregon differ in their opinions regarding factors that might increase their consumption of organic food?

Summary

Organic foods are becoming more and more mainstream in our society. Concern for the environment, as well as public knowledge about some of the potential drawbacks of biotechnology, are causing some consumers to become more "green" in their food purchases. In some areas of the country, organic foods have become more ingrained in the local culture than in other geographic areas. This study may help food companies and organic food producers gain a better understanding about the reasons why young college students in one region may choose organic foods more than in another. Once understood, these factors could be incorporated into a marketing campaign to increase organic food consumption among this population.

CHAPTER 2

REVIEW OF LITERATURE

Consumer Food Selection

When choosing to select or to not select a particular food, several characteristics are taken into account in a consumer's evaluation of a food. The first of these characteristics is preference, or the degree of like or dislike of a food. Food preference is one of the strongest single predictors of food choices and food acceptance, but due to its complexity, can not directly predict product consumption. (Dagevos, Gaasbeek, Jongen, Linnemann, & Sijtsema, 2002). For example, a consumer may prefer food A to food B, but due to outside circumstances, such as healthfulness or social acceptability, he or she may not choose to consume food A.

A consumer's wish, such as the desire for a food that is healthy, tasty, convenient, or fresh, is another motivation for selecting particular foods (Dagevos et al., 2002). Wishes and demands do not specifically relate to a particular product (such as Kellogg's Cheerios, or even something as general as cereal), but rather a general food characteristic (i.e., healthy and fresh). American consumers say that health,

price, taste, convenience, appearance, and calorie content are the "wish" variables that influence their food choices (Stewart & Tinsley, 1995).

Another factor that may influence consumers to purchase a food involves attitudes and lifestyle. Food-related attitudes may involve feelings, motives, ideas, and intentions of consumers toward foods; for example, many young people may have strong preconceived notions about foods that they have never tried simply because their parents have never pushed them to eat these foods (Roininen & Tuorila, 1999). Lifestyle factors that may influence the choosing of a food include available time to prepare food, dieting practices, and culinary skills (Dagevos et al., 2002).

Specific product-related variables are the final factors that may influence a consumer's purchasing habits. Food production methods, brand recognition, color, texture, price, ingredients, and composition (i.e., gluten-free, low-fat, low-carbohydrate) are examples of specific product-related variables (Dagevos et al., 2002). Consumer motivations for selecting organically grown and produced foods, which are an example of a consumer's specific product-related variable, will be examined in depth.

Organic Foods Defined

On October 21, 2002, the National Organic Program (NOP), a segment of the Agricultural Marketing System (AMS) of the U.S. Department of Agriculture (USDA), published a final ruling on the strict governmental definition of "organic foods" in the *Federal Register*. (U.S. Department of Agriculture [USDA], 2000). This

ruling expressly defined consistent, uniform criteria that products must follow in order to be sold, labeled, or represented as "organic."

The ruling published in the *Federal Register* was split into two categories—agricultural organic production and organic livestock production. In the case of agricultural organic production, the certified organic land must not have had prohibited substances (including any synthetic chemicals, arsenic, and specific fertilizers and pesticides, among many others) in contact with the area for a time period of three years before certification; defined, distinct boundaries must also exist, and buffer zones must be present to prevent unintentional runoff of prohibited substances from neighboring land that is not under organic management (USDA, 2000). Producers must also use organically grown seeds—the only exception to this ruling is if there are no commercially available organic seeds, in which case organic use of the land with nonorganic seeds may be sufficient under review (USDA, 2000).

For fertilization purposes, any fertilizer or composted plant or animal material containing synthetic substances may not be used. Animal manure may only be used if it is incorporated into the soil more than 120 days prior to the harvest of a food that will have its edible portion come into direct contact with the soil, and more than 90 days prior to the harvest of a food that will not have its edible portion come into direct contact with the soil (USDA, 2000).

Crop rotation standards are also included in the NOP's organic ruling. Organic producers must implement a crop rotation in order to maintain or improve organic soil content, provide for pest control, manage deficient or excess plant nutrients, and provide erosion control (USDA, 2000). Chemical pest, weed, and crop disease

controls may not be used; farmers must instead rely on alternative methods to rid their crops of pests (USDA, 2000).

In regards to livestock, animals must be fed organically produced and organically handled feed, which includes a feed ration sufficient to meet nutritional requirements, including vitamins, minerals, protein and/or amino acids, fatty acids, energy sources, and fiber (USDA, 2000). Organic producers must not use animal drugs, including hormones, to promote growth, feed plastic pellets for roughage, feed formulas containing urea or manure, or feed mammalian or poultry slaughter by-products to mammals or poultry (USDA, 2000).

Animals labeled as "organic" must also be housed in appropriate housing or pasture conditions (including access to the outdoors, shade, and dry, clean bedding), be provided an opportunity to exercise and move freely, and must be regularly vaccinated to prevent prevalent diseases (USDA, 2000). In addition, it is illegal for organic producers to withhold medical treatment from an animal in order to preserve its organic status (USDA, 2000).

The majority of animal products that are to be sold, labeled, or represented as organic must be from livestock under continuous organic management from the last third of gestation (USDA, 2000). Organic poultry or poultry products, however, must be under organic management beginning no later than the second day of life; organic dairy animals must be under continuous organic management beginning no later than one year prior to the production of the milk that is to be sold as organic (USDA, 2000).

For organic producers to receive or maintain organic certification, they must establish and implement an organic system plan that includes practices and procedures of the facility or site, lists of input substances, descriptions of monitoring practices, and descriptions of physical barriers established to prevent contamination of organic livestock or crops (USDA, 2000). On-site inspections by an organic certifying agent must be allowed. Organic certification must be repeated annually, and organic records must be kept and maintained for at least 5 years for governmental inspection (USDA, 2000). Certifying agents or state officials may perform preharvest or postharvest tests on livestock or crops to test for pesticide residues or environmental contaminants (USDA, 2000). If any institution knowingly violates any of these laws and tries to still maintain its organic certification, it may be fined up to $10,000 per violation (Dmitri & Green, 2002).

In order for the term "100% organic" to be used on labels, products, including all ingredients, must be produced and handled in accordance with these regulations. Products labeled as "organic" must contain (by weight, excluding water and salt) at least 95% organic materials (USDA, 2000). To be classified and labeled as "made with organic (specified ingredients)", a product must contain at least 70% (by weight, excluding water and salt) organically produced components (USDA, 2000). Due to a generally higher cost for organic foods (often called "price premiums"), organic food consumers want to feel confident that they are buying food that was not only grown organically, but has kept its organic integrity at each stage in its journey to the market (Dmitri & Green, 2002). Consumers can be reassured that if products use the USDA certified organic seal, they meet the above specifications. Products for export may be

labeled "organic" if they meet the organic labeling standards of the country to which they are being exported; organically labeled products that are being imported to the U.S. must comply with U.S. labeling laws (USDA, 2000).

Growth of the Organic Market

With consumers concerned about everything from mad cow disease to potential dangers of genetically modified foods, analysts say organic and natural foods are just beginning their growth (Health & Medicine Week, 2004). Growth in organic production has been strongly correlated with increased consumer knowledge about mass-produced food, at times coming as "food scares" but also with compelling evidence as some of the public health, environmental, and moral risks involved with chemical-based crop production and intensified livestock management (Guthman, 2003).

Organic foods may seem like a small portion of the nation's food supply, with only approximately 0.3 percent of all United States cropland and 0.2 percent of all United States pasture was certified organic in 2001 (USDA, 2000). However, organic farming systems continue to show strong and consistent gains in that certified organic crop ground in the United States doubled between 1992 and 1997, and again doubled between 1997 and 2001 (ERS, 2004).

Although the market is growing, some farmers may be hesitant to adopt organic farming because of limited awareness of organic farming systems, lack of innovative marketing knowledge, risks associated with shifting to a new way of farming, and simple resistance to change (Dmitri & Green, 2002). Still, many U.S.

producers are acknowledging the fact that organic farming may lower input costs and help conserve nonrenewable resources.

In order to generate high profits, organic farmers market their products directly to consumers much more frequently than conventional farmers do—this can provide a higher share of the consumer food dollar by bypassing many of the shipping, processing, and packaging costs (Dmitri & Green, 2002). Price premiums, of course, are another way that a small number of farmers have chosen to increase their profits. At farmer's markets, price premiums are occasionally implemented when a farmer feels that his or her product is of exceptional quality, or is extremely rare (Kremen et al., 2004).

Price premiums vary from product to product. A price premium is defined as the percentage above the cost of a similar, conventionally produced product. For example, if a conventional tomato costs $1.00 and an organic tomato costs $1.25, the price premium would be 25%, or 25% above the $1.00 price. Some of the highest price premiums are applied to organic soybeans, with a whopping 177% price premium in 2001, and frozen peas, with an average of a 109.7% price premium from 1992-1997 (Dmitri & Green, 2002). Organic fruits and vegetables, despite being the most commonly purchased organic foods, still generally contain a price premium. In 2001, organic broccoli had an average of approximately a 30% price premium, organic carrots had approximately a 25% price premium, and organic mesclun had approximately a 10% price premium (Dmitri & Green, 2002).

Several recent studies have shown that even without price premiums, organic farming may be more profitable to farmers than conventional systems. A Midwestern

organic grain and soybean farm was found to be more profitable than its conventional counterpart due to higher yields, lower input costs, and a more favorable crop mix (Welsh, 1999). A recent study in Washington State showed that over a 6-year period, an organic apple production system was more profitable, had similar yields, better tasting fruit, and was more environmentally stable than a conventional apple production system (Reganold et al., 2001). Of course, net returns to production systems may vary with physical and economic factors (such as soil type, climate, and proximity to markets), and a system that is optimal in one location may not be optimal in another (Dmitri & Green, 2002). Regardless, for farmers who are looking to start up organic farming systems, the returns have appeared to be worth the bargain.

As for the growth of the organic market on the consumer side, the Economic Research Service of the USDA states that fresh produce is the top-selling organic category, followed by nondairy beverages, breads and grains, prepackaged foods, and finally, dairy products and meats (ERS, 2004). The slower growth of organic meat and poultry may be due to the fact that labeling for these products did not occur until February 1999 when a label and standards were implemented by the U.S. Department of Agriculture (ERS, 2004). The majority of organic products, including eggs, dairy products, and food crops, are regulated by the U.S. Food and Drug Administration.

Growth in retail sales of organic foods has increased by 20 percent or more annually since 1990 (ERS, 2004). One out of every ten American dollars is now spent on organic and natural foods, accounting for nearly $43 billion of the nation's overall food spending (Health & Medicine Week, 2004). Over 800 new products were

introduced in the first half of 2000 alone; desserts made up the majority of new products in 2000, while beverages were the most prominent in 1999 (Dmitri & Green, 2002).

Although procurers of natural products were the primary targets of the organic market, between 1991 and 2000 there has been a dramatic shift in this pattern. In 1991, seven percent of all organic products were sold in conventional supermarkets, while 68 percent were sold in natural products stores. For the first time in the year 2000, more organic foods were purchased in conventional supermarkets than in any other venue (Dimitri & Green, 2002). One reason for this shift may have to do with the fact that large food companies are also jumping aboard the organic bandwagon. In 2000, for example, General Mills bought Small Planet Foods and its organic Cascadian Farm label; Coca-Cola owns the organic label Odwalla juices, while Pepsi markets organic tortilla chips through its Frito-Lay subsidiary (Health & Medicine Week, 2000). Kraft owns Boca Burger, and Kashi cereals are the property of Kellogg's (Health & Medicine Week, 2000).

Consumer Motivations for Selecting Organic Foods

Researchers have also tried diligently to identify the "typical" organic consumer. At times, the results are conflicting. Thompson and Kidwell (1998) determined that age, gender, income, and having a college degree did not have a statistical impact on whether a shopper would choose to purchase organic foods. In contrast, Pritchett and Hine (2003) found that consumers with higher incomes and higher levels of education were more willing to may more for organic potatoes.

Consumers with increased levels of formal science education have also been shown to be more willing to consume organic foods (Lockie et al., 2002). A study by Walnut Acres (2002) found that that 18-24 year-olds are the age group most likely to buy organic products, most likely to plan an increase in their future organic beverage consumption, and most likely to view organic foods and beverages as a smart long-term health choice.

Family structure may also play a key role in determining a person's likelihood of purchasing organic foods. Single people, although more confident in their abilities to select organic foods, were found to be less consistent in their commitments to purchasing organic foods on a regular basis (Smith & Robinson, 2002). This may be due to the fact that many single people are younger and less likely to have modified their diets to reflect their beliefs (Smith & Robinson, 2002). The higher level of responsibility taken by women for feeding children and other family members may explain a slightly higher amount of women than men choosing to purchase organic foods (Lockie et al., 2002). Several studies have also shown that households with children under 18 are more likely to purchase organic produce, primarily because they believe that these foods will provide better health benefits to their children (Thompson & Kidwell, 2004).

Numerous studies have stated "health" is a valid reason why consumers select organic foods. In the 2001 Food Marketing Institute survey, 37 percent of shoppers stated they purchased organic foods to maintain their health (Food Marketing Institute, 2001). Similarly, a 2000 study stated 66 percent of consumers purchased organic foods for health and nutrition reasons; taste (38 percent), environment (26

percent), and availability (16 percent) were also given as significant reasons (Hartman Group, 2002). Sixty-three percent of respondents in the Walnut Acres survey responded that they believed that organic foods and beverages were better for them, healthwise, than conventional foods and beverages (Walnut Acres, 2002).

Although health is a main reason why some consumers chose to purchase organic foods, there is no reason to necessarily assume a direct relationship between levels health concerns and the consumption of organic foods (Lockie, Lyons, Lawrence, & Mummery, 2002). This is not due to the fact that consumers have values that they fail to act on, but rather that there are an array of other factors that may influence a consumer to purchase these foods, such as availability, price, packaging, acceptability, or preference, as discussed above in the section entitled "Consumer Food Selection."

The Organic Lifestyle Shopper Study was conducted by the Hartman Group in 2000 (Lipke, 2001) to help determine consumers' motivations for purchasing organic foods. The Organic Lifestyle Study identified 6% of the population as "core" organic consumers, 35% as "mid-level", and 59% as "periphery" (Lipke, 2001). More importantly, the study described the types of attributes most important to different types of customers. The core consumers, for example, were most concerned with the authenticity and community benefits of organic products; mid-level consumers cared more about the retail settings and expert opinions of the benefits of organic foods, and periphery consumers were looking for convenience and comparability to conventional foods (Lipke, 2001). This information can be extremely useful to companies or farmers wishing to market their products to a specific population.

The Walnut Acres Study (2002) also reported some interesting negative consumer opinions on organic foods, including consumers' beliefs that organic farming depleted the soil of nutrients, consumers' fears of the unfamiliar, and consumers' beliefs that organic foods would not personally help their nutritional needs. Even when some consumers believed organic foods were healthier than the conventional counterparts, some believed that they did not eat organic foods frequently enough, or in a high enough volume, to gain these benefits (Lockie et al., 2002). Another consumer drawback was exposed in a grocery store survey administered by Robinson and Smith (2002) in Minneapolis suggested that, although consumers may have supportive beliefs and attitudes toward the purchase of organic foods, they may not have confidence in their abilities to purchase these same foods (Robinson and Smith, 2002). Lastly, Lockie et al. (2002) reported that the three main reasons that interested consumers do not purchase organic foods were cost, convenience, and availability.

Summary

Organic foods are the fastest growing segment of the U.S. food market (Dmitri & Green, 2002). Organic producers and handlers must adhere to strict, specific guidelines that have been set by the USDA in order to ensure the regulation of these foods in the marketplace. Regardless of the differing reasons why consumers might choose to consume organic foods, the surge in popularity of these foods shows that many consumers are likely to enjoy them for years to come.

CHAPTER 3

METHODS

The purpose of this study was to compare perceptions about the benefits of organic foods between students in two different geographic locations (e.g., Ball State University in Muncie, Indiana and University of Oregon in Eugene, Oregon). Motivating factors for selecting and consuming organic foods were also examined between these two sample populations.

IRB Approval

The research protocol was approved by both the BSU (appendix A-1) and University of Oregon (appendix A-2) Institutional Review Boards as an exempt study. In addition, the researcher completed the mandatory NIH module entitled Human Participants Protection Education for Research Teams prior to the study (appendix A-3).

Sample

A convenience sample of University students enrolled in an introductory Health Science class from Ball State University and students enrolled in an introductory religion class from the University of Oregon completed this survey. Only individuals 18 years of age and older were included in the sample.

Instrument

The administered survey was an adaptation of a survey written and administered by Dr. Stewart Lockie and his research associates at Central Queensland University in Australia (Lockie et al., 2002). Dr. Lockie was contacted, and subsequently gave his permission to use and adapt the survey questions (appendix C-1).

The final survey included seventeen questions regarding demographics, general eating patterns, perceptions of the impact of organic foods on individuals and the environment, and organic food consumption patterns. This was an anonymous survey with no personal identifiers requested; in accordance with the exempt research process, completion of this survey by the student was considered his or her consent to participate. The demographic information on racial and ethnic classifications used in this survey were taken from the U.S. Census Bureau's classifications used in the year 2000.

Collection of Data

Dr. Jerome Kotecki of the Department of Health Science agreed to allow this paper survey to be administered in his 100 level health science class. The principal investigator administered the survey on the evening of November 2, 2004 using the script approved by the BSU Institutional Review Board (Appendix B-2). Mrs. Melissa Morgan of the University of Oregon's Department of Religious Studies agreed to have the survey administered in her 100 level religion classes (Appendix C-2). One of Mrs. Morgan's associates at the University of Oregon administered the survey in her class on the afternoon of November 3, 2004.

Analysis of Data

The raw data were entered into an Excel spreadsheet. The data was then uploaded into SPSS v.11.0 for analysis (SPSS, 2004). statistical procedures performed for this research study included frequency statistics and descriptives, analysis of variance, and Chi-square analysis. The adjusted residual score was used to identify specific significant differences in all Chi-square analysis. A p value of < 0.05 was considered statistically significant in this study.

CHAPTER 4

RESULTS

The purpose of this study was to compare perceptions about the benefits of organic foods, as well as the motivations for selecting and consuming organic foods, between students in two different geographic locations. Subjects were surveyed in their 100 level classes at either Ball State University or at the University of Oregon.

Demographic and Personal Characteristics

A total of 183 students participated in this survey. Of these, 76 (42%) were students at Ball State University in Muncie, Indiana, and 107 (58%) were students at University of Oregon in Eugene, Oregon. The average age of the subjects was 21 years, with a range from 18-43 years. There was no significant difference in age between subjects from Indiana and Oregon, where the mean ages were 20.6 and 21.3 years, respectively ($F=1.47$; $p=0.226$). In general, there were more females (55.2%) than males (44.8%) who participated in this study (Table 1).

A comparison of demographic and personal characteristics between students in Indiana and Oregon appears in Table 2. Significant differences between the sample populations included gender, where more Oregon students were male (51.4% vs. 35.5%; $p=0.033$). Students also differed in their living situations, where more Indiana students lived on-campus than Oregon students (15% vs. 46.1%; $p< 0.001$). Another significant difference regarded recycling habits, where more Oregon students recycled (98.1% vs. 61.8%; $p< 0.001$).

Table 1. Demographic and Personal Characteristics of the Sample Population (n=183).

Variable	Number	Percent
Gender		
Male	82	44.8%
Female	101	55.2%
Age in Years		
18	25	13.7%
19	47	25.7%
20	39	21.3%
21	21	11.5%
22	21	11.5%
23 and over	29	15.8%
No Response	1	0.5%
Ethnicity		
Hispanic	4	2.2%
Non-Hispanic	178	97.3%
No Response	1	0.5%
Race		
White	165	90.2%
Black	2	1.1%
Multi-Racial	10	5.5%
Asian	2	1.1%
No Response	4	2.2%
Did you Smoke		
Yes	25	13.7%
No	158	86.3%
Live On-Campus		
Yes	51	27.9%
No	132	72.1%
Exercise Regularly		
Regularly	101	55.2%
Sometimes	70	38.2%
No	12	6.6%

Table 2. Comparison of the Demographic and Personal Characteristics between Indiana and Oregon Subjects (n=183).

Variable	Indiana (%) n=76	Oregon (%) n=107	$\chi 2$	p
Gender				
Male	35.5%	51.4%	4.53	0.033
Female	64.5%	48.6%		
Ethnicity				
Hispanic	1.3%	2.8%	1.87	0.552
Non-Hispanic	98.7%	96.3%		
Race				
White	92.1%	95.0%	5.29	0.259
Black	2.6%	0.0%		
Multi-Racial	2.6%	7.5%		
Asian	1.3%	0.9%		
Do you Smoke				
Yes	11.8%	15.0%	0.365	0.546
No	88.2%	85.0%		
Live On-Campus				
Yes	46.1%	15.0%	21.4	< 0.000
No	53.9%	85.0%		
Exercise Regularly				
Regularly	55.3%	55.1%	0.001	1.00
Sometimes	38.2%	38.3%		
No	6.6%	6.5%		
Recycle				
Yes	61.8%	98.1%	41.59	< 0.000
No	38.2%	1.9%		
Use Environmentally - Friendly Cleaning Products				
Yes	26.3%	35.5%	1.74	0.188
No	73.7%	64.5%		
Participate in Organizations Promoting Environment				
Yes	6.6%	9.3%	0.452	0.501
No	93.4%	90.7%		
Correspond with Elected Officials About Environment				
Yes	6.6%	14.0%	2.53	0.112
No	93.4%	86.0%		

RQ #1: Comparison of Types of Food Consumed on a Daily Basis

Results presented in this section address research question #1: "On a daily basis, do students in Indiana and Oregon differ in the types of foods consumed?" Table 3 shows a comparison between the types of food consumed on a daily basis between Indiana and Oregon students. There were no differences in the consumption patterns for fruits, vegetables, fish and shellfish, cereals or alcohol (Table 3). Significant differences were found in the consumption of meat, as well as beans and soy, with students from Oregon consuming significantly less meat (69% vs 84%; $p=0.02$) and significantly more beans and soy (38% vs 61%, $p=0.013$).

Although the types of foods consumed on a daily basis may not seem to directly affect the amount of organic food consumed, it is important to note if there are significant differences. Foods such as vegetables and fruits are much more widely available in organic forms than foods such as fish and shellfish. The fact that significantly fewer Oregon students consume meat on a daily basis may be directly related to the fact that more of these same students use beans and soy, which was significantly higher in Oregon, as their primary sources of protein.

Table 3. Comparison of Food Consumed on a Daily Basis between Indiana and Oregon Subjects (n=183).

Variable	Indiana (%) n=76	Oregon (%) n=107	$\chi 2$	p
Fruit				
Yes	76.3%	78.5%	0.122	0.726
No	23.7%	21.5%		
Vegetables				
Yes	76.3%	80.4%	0.436	0.509
No	23.7%	19.6%		
Meats				
Yes	84.2%	69.2%	5.43	0.020
No	15.8%	30.8%		
Beans and Soy				
Yes	21.1%	38.3%	6.18	0.013
No	78.9%	61.%		
Fish and Shellfish				
Yes	7.9%	9.3%	0.117	0.732
No	92.1%	90.7%		
Cereals				
Yes	57.9%	65.4%	1.07	0.301
No	42.1%	34.6%		
Alcohol				
Yes	9.2%	14.0%	0.971	0.324
No	90.8%	86.0%		

RQ #2: Biotechnology Impact on Humans

Results in this section address research question #2: "Do opinions on the effects of pesticides, preservatives, and other food modifications on humans differ between students in Indiana and Oregon?" Table 4 shows a comparison of opinions regarding the negative effects of specific types of biotechnology on humans between Indiana and Oregon students.

There was no significant difference between Indiana and Oregon students' opinions on pesticides & chemicals, genetically modified organisms, and irradiated foods. Significant differences were found, however, between the opinions of students

regarding artificial colorings and preservatives, and hormones and antibiotics in meat. More Oregon students believed that artificial colorings and preservatives could produce a negative impact on humans than Indiana students (53.3% vs. 27.6%; p= 0.001); more Oregon students than Indiana students believed hormones and antibiotics in meat could produce a negative impact on humans (71.0% vs. 50.0%; p= 0.004).

Table 4. Comparison of Opinions about the Negative Impact of Biotechnology on Humans between Indiana and Oregon Subjects (n=183).

Variable	Indiana (%) n=76	Oregon (%) n=107	χ^2	p
Pesticides and Chemicals				
Yes	94.7%	91.6%	0.667	0.414
No	5.3%	8.4%		
Genetically Modified Organisms				
Yes	52.6%	47.7%	0.439	0.508
No	47.4%	52.3%		
Irradiation				
Yes	47.4%	47.7%	0.002	0.969
No	52.6%	52.3%		
Artificial Preservatives and Colorings				
Yes	27.6%	53.3%	11.95	0.001
No	72.4%	46.7%		
Hormones and Antibiotics in Meat				
Yes	50.0%	71.0%	8.37	0.004
No	50.0%	29.0%		

RQ #3: Biotechnology Impact on the Environment

Results in this section address research question #3: "Do opinions on the negative effects of pesticides, preservatives, and other food modifications on the environment differ between students in Indiana and Oregon?" Table 5 shows a comparison of opinions regarding the negative effects of specific types of biotechnology on the environment between Indiana and Oregon students.

There was no significant difference between Indiana and Oregon students' opinions on pesticides & chemicals, genetically modified organisms, irradiated foods, and hormones & antibiotics in meat. Significant differences were found, however, between the opinions of students regarding artificial colorings and preservatives, where more Oregon students believed that artificial colorings and preservatives could produce a negative impact on the environment than Indiana students (39.3% vs. 22.4%; $p=0.016$).

Table 5. Comparison of Opinions about the Negative Impact of Biotechnology on the Environment between Indiana and Oregon Subjects (n=183).

Variable	Indiana (%) n=76	Oregon (%) n=107	$\chi 2$	p
Pesticides and Chemicals				
Yes	84.2%	86.9%	0.267	0.605
No	15.8%	13.1%		
Genetically Modified Organisms				
Yes	39.5%	43.9%	0.361	0.548
No	60.5%	56.1%		
Irradiation				
Yes	34.2%	39.3%	0.484	0.487
No	64.8%	60.7%		
Artificial Preservatives and Colorings	22.4%	39.3%	5.80	0.016
Yes	77.6%	60.7%		
No				
Hormones and Antibiotics in Meat				
Yes	39.5%	49.5%	1.814	0.178
No	60.5%	50.5%		

RQ #4: Consumption of Organic Food

Results in this section address research question #4: "Are organic foods consumed more frequently in Oregon than in Indiana?" Table 6 shows a comparison between the self-reported frequency of consumption of Organic foods between Indiana and Oregon subjects. An overall $\chi 2$ was determined, as well as an analysis within each category using adjusted standardized residuals.

There were significant differences in the self-reported consumption of organic foods between students who lived in Indiana and Oregon ($\chi 2 = 29.86$; $p < 0.001$).

Specifically, there was no significance between students who reported eating organic foods during every meal and students who reported never eating organic foods. Daily consumption of organic foods was significantly higher in Oregon students than in Indiana students (35.5% vs. 10.5%, adjusted residual 3.8); weekly consumption was significantly higher in Oregon than in Indiana (36.4% vs. 22.4%, adjusted residual 2.0); and rare consumption was significantly lower in Oregon than in Indiana (22.4% vs. 53.9%, adjusted residual 4.4).

Table 6. Comparison of Self-Reported Frequency of Consumption of Organic Foods between Indiana and Oregon Subjects (n=183).

Variable	Indiana n=76	Oregon n=107	Adjusted Standardized Residual	Significant
I consume organic foods:				
During Every Meal	1 (.42)	0 (.58)	1.2	NS
Daily	8 (19.10)	38 (26.90)	3.8	Significant
Weekly	17 (23.26)	39 (32.74)	2.0	Significant
Rarely	41 (26.99)	24 (38.01)	4.4	Significant
Never	9 (6.23)	6 (8.77)	1.5	NS
$\chi 2 = 29.86$ $p = 0.000$				

Note: Expected counts shown in parentheses. Adjusted standardized residuals exceeding 1.96 are statistically significant at $p<.05$.

RQ #5: Reasons for Selecting Organic Foods

Results in this section address research question #5: "Do the reasons behind consuming organic foods differ between students in Indiana and Oregon?" Table 7 shows a comparison between Indiana and Oregon on the reasons students cited for selecting organic foods. The only variable that was not significantly different was related to the perception that organic foods were a good value for the money. Oregon students responded significantly more positive to each of the other variables than Indiana students:

- Organic foods are healthier (64.5% vs. 48.7%; $p=0.033$)
- Organic foods are safer for human consumption (54.2% vs. 19.7%; $p<0.001$)
- Organic foods are better for the environment (44.9% vs. 13.2%; $p<0.001$)
- Organic foods taste better (33.6 vs. 14.5%; $p=0.003$)
- Organic foods have a lower chemical residue (45.8% vs. 21.1%; $p=0.001$)
- Organic foods are in harmony with my religious views (9.3% vs. 1.3%; $p=0.024$)
- Organic foods are in harmony with my political views (21.5% vs. 6.6%; $p=0.006$)

Table 7. Comparison of Reasons for Selecting Organic Foods between Indiana and Oregon Subjects (n=183).

Variable	Indiana (%) n=76	Oregon (%) n=107	$\chi 2$	p
Healthier				
Yes	48.7%	64.5%	4.55	0.033
No	51.3%	35.5%		
Safer for Human Consumption				
Yes	19.7%	54.2%	22.02	0.000
No	80.3%	45.8%		
Environmental Reasons				
Yes	13.2%	44.9%		
No	86.8%	55.1%	20.63	0.000
Taste				
Yes	14.5%	33.6%	8.56	0.003
No	85.5%	66.4%		
Good Value				
Yes	7.9%	9.3%	0.117	0.732
No	92.1%	90.7%		
Lower Chemical Residue				
Yes	21.1%	45.8%	11.88	0.001
No	78.9%	54.2%		
Religious Reasons				
Yes	1.3%	9.3%	5.07	0.024
No	98.7%	90.7%		
Political Reasons				
Yes	6.6%	21.5%	7.63	0.006
No	93.4%	78.5%		

RQ # 6: Reasons for Not Selecting Organic Foods

The results in this section address research question #6: "Do the reasons behind not consuming organic foods differ between students in Indiana and Oregon?" Table 8 shows a comparison of reasons stated by Indiana and Oregon students for not selecting organic foods.

There was no significant difference between the percentages of students who stated that they did not purchase organic foods because they felt that organic foods were no healthier than conventional foods, the percentages of students who did not purchase organic foods because they felt that organic foods had a decreased shelf life, and the percentages of students who did not purchase organic foods because they felt that organic foods were not available where they regularly purchased food. Significantly more Indiana students than Oregon students, however, stated that a higher cost was a reason why they did not select organic foods (51.3% vs. 33.6%; p=0.017).

Table 8. Comparison of Reasons for Not Selecting Organic Foods between Indiana and Oregon Subjects (n=183).

Variable	Indiana (%) n=76	Oregon (%) n=107	$\chi 2$	p
Not healthier than conventional foods				
Yes	6.6%	2.8%	1.51	0.218
No	93.4%	97.2%		
Decreased Shelf Life				
Yes	9.2%	4.7%	1.49	0.222
No	90.8%	95.3%		
Higher Cost				
Yes	51.3%	33.6%	5.74	0.017
No	48.7%	66.4%		
Not Available Where I Purchase Foods				
Yes	14.5%	12.1%	0.211	0.646
No	85.5%	87.9%		

RQ #7: Factors that Influence Selection of Organic Foods

Results in this section address RQ #7: "Do students in Indiana and Oregon differ in their opinions regarding reasons why they might choose to consume more organic foods?" Table 9 shows a comparison of various factors that might influence Indiana and Oregon students to purchase organic foods more frequently.

There was no significant difference in the percentages of students who responded that a greater availability would influence them to purchase organic foods more frequently. The percentage of students who stated that availability of prepackaged or convenience forms of organic foods would influence them to purchase organic foods more regularly was also not significantly different between Indiana and Oregon students. Significantly more Oregon students than Indiana students, however, stated that lower prices would influence them to purchase organic foods more frequently (79.4% vs. 64.5%; p=0.024).

Table 9. Comparison of Factors that Might Influence an Increase in Selection of Organic Foods between Indiana and Oregon Subjects (n=183).

Variable	Indiana (%) n=76	Oregon (%) n=107	$\chi 2$	p
Greater Availability				
Yes	50.0%	47.7%	0.097	0.755
No	50.0%	52.3%		
If Price were Lower				
Yes	64.5%	79.4%	5.08	0.024
No	35.5%	20.6%		
If Available in Convenient Packages				
Yes	35.5%	29.0%	0.882	0.348
No	64.5%	71.0%		

CHAPTER 5

DISCUSSION

The purpose of this study was to compare perceptions about the benefits of organic foods, as well as the motivations for selecting and consuming organic foods between students in two different geographic locations. A total of 183 subjects were surveyed, including 76 students from Ball State University in Muncie, Indiana, and 107 students from the University of Oregon in Eugene, Oregon.

There was no significant difference between Indiana and Oregon students' opinions regarding the negative impacts of pesticides & chemicals, genetically modified organisms, and irradiated foods on humans. Significant differences were found between the opinions of Indiana and Oregon students regarding artificial colorings and preservatives, and hormones and antibiotics in meat. More Oregon students believed artificial colorings and preservatives could produce a negative impact on humans than Indiana students (53.3% vs. 27.6%; p= 0.001); in addition, more Oregon students than Indiana students also believed that hormones and antibiotics in meat could produce a negative impact on humans (71.0% vs. 50.0%; p=

0.004). Likewise, in the Australia study, the question regarding concern about the impacts of industrialized and modified foods on humans was found to be have a significantly different response between organic consumers and non-organic consumers ($p<0.001$) (Lockie et al., 2002).

There was no significant difference between Indiana and Oregon students' opinions on pesticides & chemicals, genetically modified organisms, irradiated foods, and hormones & antibiotics in meat. Significant differences were found between the opinions of students regarding artificial colorings and preservatives; more Oregon students believed artificial colorings and preservatives could produce a negative impact on the environment than Indiana students (39.3% vs. 22.4%; $p=0.016$). In the Australia study, the question regarding general concern about the impacts of biotechnology on the environment was found to be have a significantly different response between organic consumers and non-organic consumers ($p=0.001$) (Lockie et al., 2002).

With a significantly higher number of Oregon students stating they consume organic foods on a "daily" or "weekly" basis, one wonders why Indiana students, who also similarly feel that chemicals, pesticides, irradiated foods, and genetically modified organisms might have a negative impact on humans and the environment, do not choose organic foods nearly as often. In regards to the negative impacts on humans, only 21.1% of Indiana students stated they would purchase organic foods because of a lower chemical residue, as opposed to the significantly higher 45.8% of Oregon students. A mere 14.2% of Indiana students stated that they would choose organic foods for environmental reasons, as opposed to 44.9% of Oregon students.

Are Oregon students simply more environmentally aware than Indiana students? A significantly higher amount of Oregon students said they regularly recycle, but in response to every other question regarding environmental awareness, there was no significant difference between the responses of Indiana and Oregon students; however, in the Australia study, organic consumers responded significantly higher to the question regarding environmental concern. Organic consumers felt that environmental protection was an extremely motivating factor, in contrast to the non-organic respondents ($p<0.001$) (Lockie et al., 2002).

The availability of organic food did not seem to be a barrier to purchases of these foods as only 14.5% of Indiana students and 12.1% of Oregon students stated that organic foods are not available where they regularly purchase food. Due to this perceived similar availability of organic foods, the highly skewed numbers of students who chose to consume these foods—10.5% of Indiana students stated that they consume organic foods "daily" as opposed to 35.5% of students from Oregon; 22.4% of Indiana students stated that they consume organic foods "weekly" as opposed to 36.4% of students from Oregon—shows that Oregon students are simply more willing to choose and pay for such foods. In the Australian study, availability of organic foods was not a significant factor in motivating consumers to purchase organic foods ($p=1.15$); respondents who were organic consumers and their non-organic consuming counterparts responded similarly in regards to the availability of organic foods (Lockie et al., 2002).

Organic foods have been shown to be more expensive than conventional foods. In Australia, cost was not a significant factor between the consuming group

and the non-consuming group in their motivations for choosing organic foods (p=1.57) (Lockie et al., 2002). Regardless of these results, could this factor still be the reasoning behind Indiana's lack of consumption? 51.3% of Indiana students, a significantly higher amount than the 33.5% of Oregon students, stated that higher costs may be a factor in preventing them from choosing organic foods. However, when asked the question, "Would lower prices influence you to purchase organic foods?" 64.5% of Indiana students responded yes, while a still higher 79.4% of Oregon students responded yes. This relationship clearly shows that while Indiana students may be willing to choose organic foods more frequently if they were cheaper, a still higher amount of Oregon students would be willing to do the same.

Not only do Oregon students consume a significantly higher amount of organic foods, but they were less likely to state high costs as a deterring factor. They were extremely willing to buy organic foods, and even more willing at a cheaper cost. A significantly higher percentage of Oregon students also believed that organic foods were healthier, safer, and tasted better than conventional foods.

CHAPTER 6

CONCLUSIONS, LIMITATIONS, AND RECOMMENDATIONS FOR FURTHER RESEARCH

Conclusions

Based on the findings in this study, Oregon students were much more likely to choose organic foods than Indiana students. Daily consumption was significantly higher in Oregon than in Indiana (35.5% vs. 10.5%, adjusted residual 3.8); weekly consumption was significantly higher in Oregon than in Indiana (36.4% vs. 22.4%, adjusted residual 2.0); and rare consumption was significantly lower in Oregon than in Indiana (22.4% vs. 53.9%, adjusted standardized residual 4.4).

Significant differences were found regarding the negative impact of biotechnology on humans, specifically including artificial colorings and preservatives, as well as hormones and antibiotics in meat. More Oregon students believed that artificial colorings and preservatives could produce a negative impact on humans than Indiana students (53.3% vs. 27.6%; $p= 0.001$); more Oregon students than Indiana students also believed that hormones and antibiotics in meat could produce a negative impact on humans (71.0% vs. 50.0%; $p= 0.004$).

Significant differences were also observed regarding the negative impact of biotechnology on the environment. The opinions of students regarding artificial colorings and preservatives were found to be significantly different, where more Oregon students believed that artificial colorings and preservatives could produce a negative impact on the environment than Indiana students (39.3% vs. 22.4%; $p=0.016$).

Self-reported motivations for selecting organic foods were found to be significantly higher in Oregon than in Indiana in the following categories:

- Organic foods are healthier (64.5% vs. 48.7%; $p=0.033$)
- Organic foods are safer for human consumption (54.2% vs. 19.7%; $p<0.001$)
- Organic foods are better for the environment (44.9% vs. 13.2%; $p<0.001$)
- Organic foods taste better (33.6 vs. 14.5%; $p=0.003$)
- Organic foods have a lower chemical residue (45.8% vs. 21.1%; $p=0.001$)
- Organic foods are in harmony with my religious views (9.3% vs. 1.3%; $p=0.024$)
- Organic foods are in harmony with my political views (21.5% vs. 6.6%; $p=0.006$)

Indiana students were more likely to shy away from organic foods because of higher costs. Significantly more Indiana students than Oregon students stated that a higher cost was a reason why they did not select organic foods (51.3% vs. 33.6%; $p=0.017$).

Limitations

As with any research study, limitations may exist. Limitations if this study may include:

1. The demographics of the study included a small number of respondents who may be considered older than "college-aged". In addition, a wide range of races was not represented by the two University samples;
2. Due to the fact that the administered survey was adapted from a previous survey, it generally provided multiple-choice responses, as opposed to write-in answers. This provided an easier statistical analysis, but it also may have limited the ways in which the students could respond. For example, if there was a factor that may have influenced a student to purchase organic foods more frequently that was not listed, the subjects were not provided an opportunity to include this factor;
3. Some of the surveyed students may not have understood some of the vocabulary presented in the survey instrument; and
4. Human error may have occurred during the data entry. It is the researcher's assumption that all information is accurate and correct.

Recommendations for Future Research

Based on the results of this study, the following recommendations for future research are made:

1. Different geographical areas could be surveyed, leading to a greater understanding of country (or world) wide trends in organic food consumption patterns.
2. More factors could be listed in the categories of "reasons why I choose organic foods," "reasons why I do not choose organic foods," and "reasons that may influence me to purchase organic foods more frequently."
3. Data could be collected from various age groups to gain a broader understanding of the entire population, as opposed to educated students in a particular age range.
4. Data could be collected from a broader range of races and ethnicities.
5. Descriptions of various definitions (such as "irradiated foods") should be explained so that all subjects who take the survey begin with the same basic knowledge.

REFERENCES

Dimitri, Carolyn, and Catherine Greene. (2002). Recent growth patterns in the U.S. organic foods market. Retrieved September 1, 2004 from Economic Research Service/USDA Website: http://www.ers.udda.gov/publications/aib777

Food Marketing Institute. *Trends in the United States: Consumer attitudes and the supermarket.* (2001). Retrieved October 11, 2004 from http://www.fmi.org

Guthman, Julie. (2003). Fast food/organic food: reflexive tastes and the making of 'yuppie chow'. *Social & Cultural Geography.* 4(1), 45-58.

Hartman Group. *The organic consumer profile* (1999). Retrieved October 21, 2004 from http://www.hartman-group.com

Kremen, Amy, Catherine Greene, and Jim Hanson. Organic produce, price premiums, and eco-labeling in U.S. farmers' markets. Retrieved October 5, 2004 from Economic Research Service/USDA. Website:http://www.ers.usda.gov/publications/VGS/Apr04/vgs30101/vgs30101.pdf

Lipke, David. (2001). Good for whom? *American Demographics.* (1), 36-37.

Lockie, Stewart, et al. (2002). Eating 'green': Motivations behind organic food consumption in Australia. *Sociologia Ruralis.* 42(1), 23-40.

National Marketing Institute. *Organic consumer trends report.* (2001). Retrieved October 14, 2004 from *http://*www.nmisolutions.com

National organic program standards from the USDA. (2000, March 13). Retrieved Octover 12, 2004, from http://www.ams.usda.gov/nop/NOP/standards.html

Organic foods go mainstream. (2004, July 5.) Retrieved September 14, 2004 from http://www.newsrx.com

Pritchett, J.G. and S. Hine. (2003) "San Luis potato study." Department of Agricultural and Resource Economics, ABMR 03-01.

Reganold, J. P., J. D. Glover, P. K. Andrews, and H. R. Hinman. 2001. Sustainability of three apple production systems. Nature. 410:926-930.

Robinson, Ramona, and Chery Smith. (2002). Psychosocial and demographic variables associated with consumer intention to purchase sustainably produced foods as defined by the midwest food alliance. *Journal of Nutrition Education and Behavior.* 34(6), 316-325.

Roininen, K. And Tuorila H. (1999). Health and taste attitudes in the prediction of use frequency and choice between less healthy and more healthy snacks. *Food Quality & Preferences.* 4: 11-20.

Scott, Aurelia C. (2004). The new organics. *Yankee.* 68(1), 44-47.

Sijtsema, Siet, et al. (2002). Variables influencing food perception reviewed for consumer oriented product development. *Critical Reviews in Food Science and Nutrition.* 42(6), 565-581.

Stewart, B. and Tinsley A. (1995). From qualitative to quantitative: development of an instrument to assess food choice influences of young adults. *Ecology Food Nutrition.* 34: 171-181.

Thompson, G.D., and J. Kidwell. 1998. "Explaining the choice of organic produce: Cosmetic defects, prices, and consumer preferences." *American Journal of Agricultural Economics.* 80:277-287.

Youngest adults drive growth of organic foods and beverages. (2002, April 9). Retrieved September 10 from **http://www.walnutacres.com/news_view.php?id=14**

Welsh, R. (1999). The economics of organic grain and soybean production in the midwestern United States. Retrieved September 18, 2004 from http://www.hawiaa.org/pspr13.htm

APPENDIX A

IRB APPROVAL

UNIVERSITY OF OREGON

October 12, 2004

TO: Jennifer Lounsberry, Principal Investigator
Department of Family and Consumer Sciences
Ball State University

FROM: Juliana Kyrk, Human Subjects Compliance Coordinator
Committee for the Protection of Human Subjects/
Institutional Review Board (CPHS/IRB)

RE: Protocol #E161-05F, entitled "Organic Foods: A Comparison of Selection, Perception, and Consumption Habits of College Students in Indiana and Oregon"

The materials enclosed with this notice have been REVIEWED and APPROVED by the Committee for the Protection of Human Subjects/Institutional Review Board. Please keep the materials on file along with documentation of informed consent where applicable.

The approval of the CPHS/IRB is based upon your representations of the nature of the project and the involvement of human subjects. If during the course of your project you change your methodology in any way that materially alters the involvement of human subjects, you are required to submit such changes to the CPHS/IRB for approval prior to implementation.

This approval is for one year, unless otherwise noted. Under the regulations, the CPHS/IRB will review projects at least annually, or more often if it deems that the risks to subjects warrant a more frequent review. Investigators will be notified approximately one month prior to expiration of the current approval period that the CONTINUING REVIEW FORM must be completed and submitted, along with a sample of the informed consent form in use, to the Human Subjects Compliance Office. If there are no problems, adverse effects on subjects, or changes in activities by the investigator, continuing review will be handled administratively. If any of these conditions are present, review of the project will be conducted by the CPHS/IRB and a revised HUMAN SUBJECTS ACTIVITY REVIEW FORM must be submitted.

During that period of the project when human subjects are involved, graduate students must meet the university requirements of continuous enrollment. The student must register for 3 graduate credits each term, excluding summer sessions, to be continuously enrolled. Undergraduate students must be enrolled for at least one credit hour of research.

When the project is terminated (i.e., procedures involving human subjects are completed), the investigator should complete the FINAL REPORT portion of the CONTINUING REVIEW FORM and send it to Human Subjects Compliance. All consent forms must be kept by the investigator for three years after the research is completed.

If you have any questions, please contact me at 346-2510. You may also consult the Investigator's Manual on Research with Human Subjects, available from the Human Subjects Compliance Office.

cc: Carol Friesen, Faculty Advisor

COMMITTEE FOR THE PROTECTION OF HUMAN SUBJECTS • OFFICE OF HUMAN SUBJECTS COMPLIANCE
5237 University of Oregon, Eugene OR 97403-5237 T (541) 346-2510 F (541) 346-5138
http://darkwing.uoregon.edu/~humansub/

BALL STATE UNIVERSITY

ACADEMIC AFFAIRS
OFFICE OF ACADEMIC RESEARCH AND SPONSORED PROGRAMS

Muncie, Indiana 47306-0155
Phone: 765-285-1600
Fax: 765-285-1624

INSTITUTIONAL REVIEW BOARD

TO: Jennifer Lounsberry
2400 W. White River Blvd. Apt. C5
Muncie, IN. 47303

FROM: Jerrell Cassady, Chair
Institutional Review Board

DATE: October 22, 2004

RE: Human Subjects Protocol – IRB # 05-070

The Institutional Review Board has approved the revision of your protocol *Organic Foods: A Comparison of Selection, Perception, and Consumption Habits of College Students in Indiana and Oregon.* Such approval is in force from 10/21/2004 to 10/20/2005. Please keep in mind that prior to the completion of the study, if further modification or extension requests are necessary, they should be addressed in writing to the Institutional Review Board, c/o the Office of Academic Research & Sponsored Programs (2100 Riverside Ave).

pc: Carol Friesen, Family and Consumer Sciences

This is to certify that

Jennifer Lounsberry

has completed the **Human Participants Protection Education for Research Teams** online course, sponsored by the National Institutes of Health (NIH), on 09/12/2004.

This course included the following:

- key historical events and current issues that impact guidelines and legislation on human participant protection in research.
- ethical principles and guidelines that should assist in resolving the ethical issues inherent in the conduct of research with human participants.
- the use of key ethical principles and federal regulations to protect human participants at various stages in the research process.
- a description of guidelines for the protection of special populations in research.
- a definition of informed consent and components necessary for a valid consent.
- a description of the role of the IRB in the research process.
- the roles, responsibilities, and interactions of federal agencies, institutions, and researchers in conducting research with human participants.

National Institutes of Health
http://www.nih.gov

APPENDIX B

SURVEY AND PROTOCOL

B-1 SURVEY

B-2 SCRIPT FOR THE SURVEY ADMINISTRATOR

Organic Foods: A Comparison of Selection, Perception, and Consumption Habits of College Students in Indiana and Oregon

You are being invited to participate in a research study entitled "Organic Foods: A Comparison of Selection, Perception, and Consumption Habits of College Students in Indiana and Oregon," which is being conducted by Jennifer Lounsberry, a student in the Department of Family and Consumer Sciences at Ball State University. This study is being used to determine consumer motivations for choosing to eat organic foods. For questions regarding the research, you may contact the project director by e-mail at jmlounsberry@bsu.edu.

If you decide to participate, you will be asked to complete a seventeen question survey that will take approximately five to ten minutes. Your participation is completely voluntary, and you are free to withdraw from the study at any time you choose, without penalty or prejudice from the investigator or instructor. Choosing to complete this survey indicates your consent to participate in this research study. If you do not want to participate in this study, simply return a blank survey. When you have completed the survey, **please remove this letter to keep for your records**, and place the completed survey in the envelope at the front of the classroom.

Please feel free to ask any questions of the survey administrator before beginning the survey, or at any time during the study. For your rights as a research subject, contact the Coordinator of Research Compliance, Office of Academic Research and Sponsored Programs, Ball State University, Muncie, IN 47306, or by telephone at (765) 285-5070.

Organic Foods: A Comparison of Selection, Perception, and Consumption Habits of College Students in Indiana and Oregon.

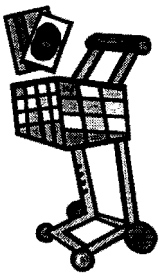
DIRECTIONS: Please check ☒ the answer that most closely represents how you feel about each question. Thank you for completing this survey.

I (check all that apply):

- ☐ Recycle
- ☐ Use environmentally-friendly cleaning products
- ☐ Participate in organizations that promote positive environmental change
- ☐ Correspond with elected officials regarding my environmental concerns

Most of the food that I eat comes from:

- ☐ Local grocery stores
- ☐ On-campus dining halls
- ☐ Restaurants
- ☐ Other _____



On a daily basis, I consume: (check all that apply)

- ☐ Fruits
- ☐ Vegetables
- ☐ Meats
- ☐ Fish and Shellfish
- ☐ Cereals
- ☐ Beans and Soy
- ☐ Alcohol

In general, I feel that the following are unhealthy for humans to consume: (check all that apply)

- ☐ Pesticides and other chemicals
- ☐ Genetically modified organisms
- ☐ Irradiated foods
- ☐ Preservatives and artificial coloring
- ☐ Hormones and antibiotics in meat

In general, I feel that the following are detrimental to the environment: (check all that apply)

- ☐ Pesticides and other chemicals
- ☐ Genetically modified organisms
- ☐ Irradiated foods
- ☐ Preservatives and artificial coloring
- ☐ Hormones and antibiotics in meat

Which of the following factors may influence you to purchase a particular food? (check all that apply)

- ☐ Nutrition
- ☐ Help in weight control
- ☐ Good at providing energy for exercise and sport
- ☐ Stress relief and relaxation
- ☐ Convenience and ease of preparation
- ☐ Good value for my money
- ☐ Prepared and grown in an environmentally friendly way
- ☐ Familiarity—it's like the food I ate as a child

I consume organic foods:

- ☐ During every meal
- ☐ Daily
- ☐ Weekly
- ☐ Rarely
- ☐ Never

I consume organic foods because: (check all that apply)

- ☐ I do not consume organic foods.
- ☐ I feel that organic foods are healthier to eat than conventionally prepared foods.
- ☐ I feel that organic foods are safer to eat than conventional foods.
- ☐ I feel that chemicals and fertilizers cause many environmental problems.
- ☐ I feel that organic foods taste better than conventionally prepared foods.
- ☐ I feel that organic foods are a good value for the money.
- ☐ I feel that organic foods have a lower chemical residue than conventional foods.
- ☐ Organic foods are in harmony with my religious views.
- ☐ Organic foods are in harmony with my political views.

I do NOT consume organic foods because: (check all that apply)

- ☐ I do consume organic foods
- ☐ I feel that organic foods have no more vitamins and minerals than conventional foods.
- ☐ Organic foods have a shortened shelf life.
- ☐ I am not willing to pay more for organic food products.
- ☐ Organic foods are not available where I regularly purchase food.

I would consume organic foods more frequently if: (check all that apply)

- ☐ They were more available in places where I usually purchase foods.
- ☐ They were cheaper.
- ☐ They were available as prepackaged, pre-prepared, or convenience foods.

I live:

- ☐ On-campus
- ☐ Off-campus

I am a:

- ☐ Smoker
- ☐ Non-Smoker

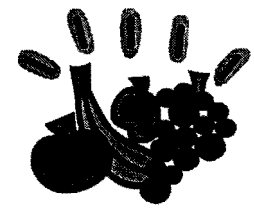
I exercise:

- ☐ Regularly
- ☐ Sometimes
- ☐ Rarely

My gender is:

- ☐ Male
- ☐ Female

I am _____ years old.



Are you of Hispanic or Latino Origin?

- ☐ Yes
- ☐ No

What is your race? (check all that apply):

- ☐ American Indian or Alaska Native
- ☐ Black or African American
- ☐ Native Hawaiian or other Pacific Islander
- ☐ Multi-Racial
- ☐ Asian
- ☐ White or Caucasian
- ☐ Other _____

Organic Foods: A Comparison of Selection, Perception, and Consumption Habits of College Students in Indiana and Oregon.

Jennifer M. Lounsberry

Script for the Survey Administrator

You are being invited to participate in a research study conducted by Jennifer Lounsberry, a student in the Department of Family and Consumer Sciences at Ball State University. The purpose of this study is to compare perceptions about the necessity of organic foods, as well as motivations for selecting organic foods from students in two different Universities. You were selected as a possible participant in this study because you are a college student at Ball State University.

If you decide to participate, you will be asked to fill out a seventeen question survey that will take approximately five to ten minutes. This survey will provide data for a thesis; in addition, it may help to identify a need for a certain products in certain areas. However, I cannot guarantee that you personally will receive any benefits from this research.

There is no information obtained in connection with this study that can identify you. Your participation is voluntary. Your decision whether or not to participate will not affect your relationship with your instructor, your class grade, or your University. If you decide to participate and you change your mind during the survey, you are free to withdraw your consent and discontinue participation at any time without penalty. Choosing to complete the survey indicates your consent to participate in this research study. If you do not want to participate in this survey, simply return a blank survey. When you have completed the survey, please place it in the envelope at the front of the classroom. When your survey is collected, you are free to leave.

If you have any questions, please feel free to contact Jennifer at (765) 282-2463, or her faculty advisor, Dr. Carol Friesen, at (765) 285-5931. If you have questions regarding your rights as a research subject, contact the Office of Human Subjects Compliance.

APPENDIX C

LETTERS OF PERMISSION

C-1 LETTER OF PERMISSION FROM STEWART LOCKIE

C-2 LETTER OF PERMISSION FROM MRS. MORGAN

Friesen, Carol A.

From: Stewart Lockie [s.lockie@cqu.edu.au]
Sent: Thursday, September 09, 2004 1:07 PM
To: Friesen, Carol A.
Subject: FW: Organic Food Consumption Survey

National organic foods survey ...

Dear Carol,

My secretary forwarded on your email. I am delighted to dear that you and your student have found our study useful. We have another article based on the research coming out soon in the journal Appetite you might like to keep an eye out for.

I don't have a copy of the final instrument as administered on my computer but I have attached a table that summarises the survey questions into the scales they were intended to measure. Although this doesn't include the response categories it is probably more useful as the logic is more readily apparent and you can lift whatever you like to suit your own format and administration procedure. The article you've already seen includes details anyway on response categories.

At the moment, I actually am in the States, spending a couple of months at the University of California, Santa Cruz with the agro-food studies group and frantically trying to write up other aspects of our research on organics from the last couple of years.

All the best, Stewart

-----Original Message-----
From: Friesen, Carol A. [mailto:cfriesen@bsu.edu]
Sent: Thursday, 9 September 2004 3:26 AM
To: c4ssr@cqu.edu.au
Cc: Lounsberry, Jennifer M
Subject: Organic Food Consumption Survey

Hello from Muncie, Indiana! I am a faculty member at Ball State University in the Department of Family and Consumer Sciences. I have an honors student, Jennifer Lounsberry, who is interested in identifying students' attitudes, knowledge, and purchasing behaviors of organic foods here in Muncie (very conservative area; farm belt region) compared to students' response at the University of Oregon (west coast; more 'hip'; anticipated higher awareness and interest). We were thrilled to find the article "Eating 'Green': Motivations Behind Organic Food Consumption in Australia" published in the the Sociologia Ruralis in January of 2002. We were hoping upon hope that you might be willing to share your survey with us so that we could perhaps use it in our project?? Would that be possible? I think it would be wonderful, too, to compare our results to your results! Perhaps we could get a joint article of out of this. I would be very, very interested in this!

We look forward to hearing from you. If you have any questions, please don't hesitate to contact me or Jennifer.

Carol Friesen, PhD, RD

UNIVERSITY OF OREGON

September 17, 2004

Dr. Carol Friesen and Jennifer Lounsberry
2400 W. White River Boulevard
Apartment #5C
Muncie, IN 47303

Dear Dr. Carol Friesen and Jennifer Lounsberry,

I have received your request to administer surveys to the students in my Intro to Islam class this fall term. I am happy to serve as your faculty contact at the University of Oregon and give my permission for these surveys to be administered in my classrooms. I also pledge my assistance in distributing and collecting these surveys.

Organic foods are very common and accepted here and I will be interested to see what the results suggest about this trend. I will also be interested to read your conclusions about why students at the University of Oregon are choosing organic foods more often than the students at Ball State University. Please feel free to let me know what other assistance I can provide to you in your research endeavors.

Sincerely,

Melissa Morgan
Graduate Teaching Fellow
Department of Religious Studies

DEPARTMENT OF RELIGIOUS STUDIES
1294 University of Oregon, Eugene OR 97403-1294 T (541) 346-4971 F (541) 346-4118